

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID DORNFELD
and
JIANSHE TANG

Appeal No. 2002-1029
Application No. 08/869,328

ON BRIEF

Before FRANKFORT, PATE and McQUADE, ***Administrative Patent Judges***.
PATE, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is an appeal from the final rejection of
claims 1, 4, 6, 7, 9 through 15, 17 through 25, and 36

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through 40. Claims 2, 3, 5, 8, 16, and 26 through 35 are cancelled. These are all the claims in the application.

The claimed invention is directed to a chemical-mechanical planarization of semiconductor wafers. The claimed process is related to a method of terminating such a planarization. The present invention involves monitoring acoustic emission energy with a frequency of over 50,000 Hertz for a planarization termination signal.

The claimed invention may be further understood with reference to the appealed claims attached as an appendix to appellant's Supplemental Appeal Brief, Paper No. 28.

The references of record relied upon by the examiner as evidence of obviousness are:

Yu	5,222,329	June 29, 1993
Salugsugan	5,245,794	Sept. 21, 1993

REJECTION

Claims 1, 4, 6, 7, 9 through 15, 17 through 25, and 36 through 40 stand rejected under 35 U.S.C. § 103 as unpatentable over Yu in view of Salugsugan. According to the examiner, it would have been obvious to have modified the Yu apparatus and

method with a filter as taught by Salugsugan to halt the polisher operation. The examiner considers the specific frequency range of the claimed subject matter to be a result effective variable.

OPINION

We have carefully reviewed the rejection on appeal in light of the arguments of the appellants and the examiner. As a result of this review, we have reached the determination that the applied prior art does not establish the ***prima facie*** obviousness of the claims on appeal. Our reasons follow.

The following represents our findings of fact with respect to the scope and content of the prior art and the differences between the prior art and the claimed subject matter. Yu discloses a method for controlling a chemical-mechanical polishing operation on a workpiece comprising the steps of polishing the workpiece with a slurry of abrasives. The polishing operation generates acoustic energy emissions which are detected. The sound intensity versus the frequency of the acoustic emission is measured. Col. 6, lines 3-5. When a significant change in the sound frequency and amplitude is

detected, the end point of polishing has been reached. Yu teaches several frequency ranges for his disclosed process. On the one hand, Yu suggests monitoring frequencies in the audible range (approximately 20 Hz to 20,000 Hz) using a microphone as a transducer. However, Yu also discloses using acoustic energy in the non-audible range (less than 20 Hz or greater than 20,000 Hz). See col. 6, lines 48-51; col. 4, lines 48-53. For frequencies above 20,000 Hz, Yu states that a contact transducer, such as a piezoelectric transducer, may be used in lieu of the microphone. ***Id.*** Yu does not specifically disclose detecting acoustic emissions at frequencies above 50,000 Hz.

Salugsugan discloses a similar process. However, Salugsugan uses low frequencies to signal the end of polishing, specifying a low band pass filter to attenuate frequencies above 200 Hz by at least 60 db. Consequently, Salugsugan does not disclose frequencies above 50,000 Hz.

The examiner is of the view that with respect to the frequency range above 50,000 Hz, "the values of the mechanical properties are obvious because they are a matter of determining optimum conditions by routine experimentation. Discovery of [an] optimum value of [a] result effective variable in [a] known

process is ordinarily within the skill in the art." See Examiner's Answer, page 4. The examiner cites *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). However, in *Boesch*, it was held that "optimizing a variable **which was known to be result effective**" was within the ordinary skill in the art (emphasis supplied). *Boesch*, 617 F.2d at 276, 205 USPQ at 219, quoting *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6, 8-9 (CCPA 1977). Thus, under such a scenario, the examiner has a burden of establishing that the prior art recognizes that the variable is result effective.

In the present case, the patent to Yu merely discloses sampling acoustic energy in a range above 20,000 Hz. There is no disclosure that any frequency affects the sensitivity of the process cutoff or that any frequency above 20,000 Hz is better than any other frequency. In fact, Yu discloses nothing other than frequencies above 20,000 Hz may be used. There is certainly no disclosure that frequency is a variable that can be optimized to effect a result. Accordingly, in our view, the prior art taken as a whole, as combined by the examiner, is merely an invitation to experiment -- an example of obvious to try.

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An "obvious-to-try" situation exists when a general disclosure may pique the scientist's curiosity, such that further investigation might be done as a result of the disclosure, but the disclosure itself does not contain a sufficient teaching of how to obtain the desired result, or that the claimed result would be obtained if certain directions were pursued. **See generally *In re O'Farrell***, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (defining obvious-to-try as when prior art gives "only general guidance as to the particular form of the claimed invention or how to achieve it") [***In re Eli Lilly & Co.***, 902 F.2d 943, 945, 14 USPQ2d 1741, 1743 (Fed. Cir. 1990)].

The rejection of all claims on appeal is reversed.

REVERSED

CHARLES E. FRANKFORT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
WILLIAM F. PATE, III)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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